



## PECO NUCLEAR

A Unit of PECO Energy

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Docket Nos. 50-277  
50-278  
License Nos. DPR-44  
DPR-56

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station Units 2 & 3  
Response to Notice of Violation (Combined Inspection Report No.  
50-277/96-06 & 50-278/96-06)

Gentlemen:

In response to your letter dated December 27, 1996, which transmitted the Notice of Violation concerning the referenced inspection report, we submit the attached response. The subject report concerned a Routine Resident Integrated Safety Inspection that was conducted July 7, 1996 through September 7, 1996. A Pre-decisional Enforcement Conference concerning these issues was conducted December 6, 1996.

If you have any questions or desire additional information, do not hesitate to contact us.

Thomas N. Mitchell  
Vice President,  
Peach Bottom Atomic Power Station

### Attachments

cc: W. T. Henrick, Public Service Electric & Gas  
R. R. Janati, Commonwealth of Pennsylvania  
H. J. Miller, US NRC, Administrator, Region I  
W. L. Schmidt, US NRC, Senior Resident Inspector  
H. C. Schwemm, VP - Atlantic Electric  
R. I. McLean, State of Maryland  
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## RESPONSE TO NOTICE OF VIOLATION

### Restatement of Violation

10 CFR Part 50, Appendix B, Criterion III, Design Control, requires in part, design control measures shall provide for verifying or checking the adequacy of design changes. Appropriate measures include design reviews, calculational methods or a suitable test program. ANSI N45.2.11, to which you are committed, requires in Section 6.2 that where changes to previously verified designs have been made, design verification shall be required for the changes, including the evaluation of the effects of those changes on the overall design.

Contrary to the above, between June 1995 and July 1996, evaluation of the effects of design changes on the overall design were not made to verify the adequacy of Modification P-0231. Prior to June 1996, PECO did not fully understand how the modification affected other important safety systems. As a result, the adequacy of the design change was not understood for all the aspects of providing the emergency diesel generators with an automatic transfer of generator governor and voltage regulator from the droop to the isochronous mode of operation. Specifically, PECO failed to evaluate the effect of the modification on RHR pump start time and the effect of changed RHR pump start time on the overall facility design.

This violation represents a Severity Level IV problem (Supplement I).

### Reason for the Violation

On June 6, 1996, personnel working on the Peach Bottom Simulator discovered a condition associated with the anti-pumping circuitry of the emergency diesel generator (EDG) output breakers that was recognized to warrant further investigation.

This investigation resulted in an in-depth study being performed by licensing and engineering. This study included detailed design reviews of numerous scenarios associated with an EDG in test mode. These reviews revealed that the identified condition at the simulator would occur at the plant. Until this design review was performed in June 1996, PECO did not fully understand how the EDG modification (P-0231) affected other important safety systems. Specifically, as stated in the NRC notice of violation dated December 27, 1996, "*PECO failed to evaluate the effect of the modification on RHR pump start time, and the effect of changed RHR pump start time on the overall facility design*". As stated at the enforcement conference, PECO has determined that the modification accomplished its design purpose to protect the EDG and did not cause an adverse impact on the RHR start time. However, the in-depth study and scenario review did reveal that PECO failed to identify the RHR pump start time delay issue as part of the modification review process. Additionally, the modification evaluation was less-than-adequate in that it did not identify other design issues associated with the modification as described in Combined Inspection Report No. 50-277/96-06 and 50-278/96-06.

A review of the modification performed in July 1996, included the MOD Safety Evaluation (SE) and the Design Input Document (DID) for the EDG modification (P-0231). The review of the SE and DID revealed that the changes to the mechanical design features of the EDG were thoroughly discussed. In contrast, the changes to the electrical design were not fully discussed. For example, the DID for this MOD compares the pre-modification method of switching from droop mode to isochronous mode under emergency conditions to the post-modification response. However, this review revealed no documented evidence of an evaluation of the effects of the modification on ECCS pump start sequences.

The modification reviews during design, included mechanical, structural, instrumentation and controls and electrical. However, a thorough design verification of the electrical design was not performed and documented; specifically the change analysis performed was less-than-adequate. This resulted in PECO not fully understanding the EDG MOD P-0231 design and its impact on other systems.

### Corrective Steps That Have Been Taken and the Results Achieved

Upon discovery, appropriate plant procedures were revised and information provided to the operating teams pertaining to an emergency diesel generator in the test mode. Corrective actions and results achieved are as follows:

EDG operating procedures, i.e. surveillance procedures, routine test procedures and system operating procedures were revised to reflect information learned during the in-depth study.

Two communications were completed (June 6, 1996 and June 18, 1996) to inform the shift operating teams of the condition observed at the simulator.

Operations Teams refreshed their understanding on the manual actions required to reset breaker lock-out during a briefing held with each shift team. Additionally, this issue was incorporated in the simulator lesson plan and presented to the licensed operating staff in continuing training.

An in-depth study of the EDG design was performed. This study and verification of the design entitled "PBAPS EDG Licensing Basis" was completed on July 16, 1996, and confirmed that the existing design meets all design commitments.

A review was performed to understand the conditions observed on the simulator in relation to the installed circuit modification. Corrective actions and results achieved are as follows:

A Non-Conformance Report (NCR) evaluated the acceptability of the identified conditions associated with an EDG in test. This NCR was approved on September 12, 1996, resulting in clarifying the description of the MOD P-0231 in the UFSAR.

An Engineering Change Request (ECR) was generated to document a design analysis of the PBAPS Emergency Diesel Generator / 4KV breaker interface issues. Numerous scenarios (different combinations and time sequences of LOCA, LOOP) were analyzed and documented by an expert team. This ECR was approved on September 18, 1996 and provides for an understanding of the relationship of these scenarios to the design basis.

A revision to "Design Control and Processing of Engineering Change Requests (ECRs)", (MOD-C-9) has been completed and issued November 25, 1996, to include the need to document the impact of the ECR disposition on existing plant Systems, Structures, and Components (SSC) with the regard to operational parameters including complex component sequencing (e. g. relay contacts).

#### Corrective Steps That Will Be Taken to Avoid Further Violations

PECO will proceduralize the need to perform and document a thorough change analysis in the course of a design verification for safety-related modifications involving electrical logic design changes. Procedures will be revised and issued by March 31, 1997.

PECO will provide training to all Design Engineers on expectations for design verification for safety-related modifications involving electrical logic design changes. This training will be completed by April 30, 1997.

PECO will provide appropriate procedural guidance to include expectations for expert panel reviews for safety-related modifications involving electrical logic design changes and the necessity to continue performance of these reviews. These reviews will be monitored periodically to determine effectiveness of these corrective actions. This will be implemented by April 30, 1997.

#### Date When Full Compliance Was Achieved

Full compliance was met on July 16, 1996 when an evaluation of the effects of the design change on the overall design was performed and the design of the modification was verified in the "PBAPS EDG Licensing Basis."